

**Comments on the Preliminary Draft
Red River Valley Water Supply Project Biota Transfer Specific Plan of Study**

As per your electronic mail message of August 23, 2002, we have reviewed the August 15, 2002 report entitled "Preliminary Draft Red River Valley Water Supply Project Biota Transfer Specific Plan of Study". Our comments on this document are as follows:

The report cover and introduction should clearly identify the agency which prepared the document and the agency which sponsored the development of the Plan of Study. The reader should not have to wade through the document for this information.

A simple table and a figure should be used to describe the various USGS hydrological units and their codes.

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"CERC will conduct technical analysis of risks and consequences associated with biota transfers..... including that developed for hazard and critical control point analysis for aquatic nuisance species and similar applications (Minnesota Sea Grant/Michigan Sea Grant 2001)."

This use of CERC could be a very good analysis tool and is being used by a number of agencies for Biota Transfer Risk Analysis. We recommend that the Bureau invites Doug Jensen of Minnesota Sea Grant to make a presentation on this procedure to a meeting of the RRVWS technical team.

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"...This section includes preliminary models developed to meet this objective...."

When considering the Biota Transfer issue, unknown organisms are of as much as or greater than those known organisms. Water supply infrastructure represents a set of pathways for a potential transfer of organisms. The task is to block the pathway to all potential transfers, not just the ones known about.

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Rather than a general watershed map of the US, a figure should show the hydrological units codes (HUC) under discussion.

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"...In contrast, our definition of "invasive species" follows as an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health..."

One of the major big problems is the inability to predict or identify which species will become invasive!

Page: 15 Table 1

This table was a problem to our reviewers, especially since the report does not indicate how this list of species of concern was derived. Some comments on the organisms listed are:

“Blue -green algae (Cyanobacteria):”

All of the species listed are present in the Red River-Lake Winnipeg system and regularly cause blooms in both the southern and northern basins of Lake Winnipeg each year.

“Vascular plants

Eurasian water-milfoil (*Myriophyllum spicatum*)...”

This species was identified as present in the Sheyenne River at Valley City in 1996, however, it has not been observed in the system since 1997. The species is also present in the Missouri basin in Lake Sharpe, South Dakota, down stream of any proposed RRVWS infrastructure. The species is present in Minnesota, as yet only in the Mississippi River basin.

“Aquatic invertebrates:

Mollusks...”

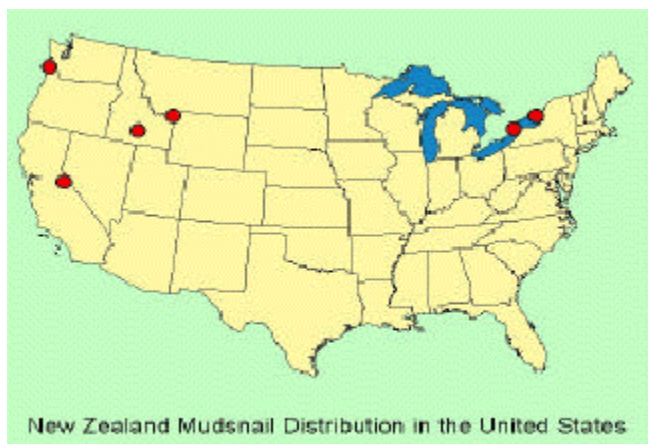
Dreissena polymorpha (zebra mussel)

At the present time, this species is recorded as present in Missouri basin below the head of navigation. The main pathway for introduction of this organism to jurisdictions west of the 100th meridian are thought to be through transfer by private watercraft and trailers.

A recently discovered non-native invasive species is the New Zealand mud snail (*Potamopyrgus antipodarum*). This species has been recorded in the headwater streams of the upper Missouri in the Bozeman, Montana area. A summary of the New Zealand Mud Snail can be found at the following web-site:

<http://www.esg.montana.edu/aim/mollusca/nzms/ans4-4.pdf>

The current distribution of this species in North America is as follows;



“Crustaceans”

Bythotrephes cederstroemi (spiny water flea)

We do not know if this is a Great Lakes invader organism is present in the Missouri basin. A fact sheet on this organism is at the following web-site

<http://www.sgnis.org/publicat/papers/bergdj92.pdf>

“Protozoa and Metazoa

Polypodium hydriforme

Cryptosporidium parvum

Giardia lamblia...”

All these four species are present in the Red River/Lake Winnipeg basin. *Giardia* was included in the list of organisms of concern for the NAWS project, not because of its invasive potential but more as an indicator species for disinfection or inactivation success. If the spores of *Giardia* can be removed from a water supply, then other biota transfer concerns in the closed system may be limited.

We collaborated with U.S. agencies on the *Polypodium* issues during background work for the Garrison Joint Technical Committee Report to the U.S.-Canada Consultative Group (referred to as the “Red, White and Blue” report) in November 1990. Terry Dick at the University of Manitoba confirmed that this parasite of sturgeon is endemic to the Red River-Nelson River-Hudson Bay drainage basin.

“...Bacteria and Viruses

Legionella...”

Legionella bacteria are natural inhabitants of water and can be detected in rivers, lakes, and streams. One type of *Legionella* species (*L. longbeachae*) has been found in potting soil. *Legionella* bacteria are rather ubiquitous in the environment. Legionnaires' disease is a lung infection (pneumonia) caused by a bacterium named *Legionella pneumophila*. *Legionella* enters the lung via aspiration (choking) when foreign particles including bacteria escape the gag reflex and fall directly into the respiratory tract

(windpipe and lung). It can also enter by inhalation of aerosols, however, many public health officials believe that this mode of transmission is overemphasized.

“Salmonella typhi”

Why has this organism been included in the list of potential transfer organisms? *Salmonella typhi*, as opposed to the other species of *Salmonella*, has no animal reservoir. It is strictly a human pathogen and is spread by the fecal-oral route by asymptomatic carriers who seem to have a predilection for the food industry from where they can infect hundreds of people. Since salmonellae are acquired through ingestion of contaminated foodstuffs, sanitary means of control are most important. *Salmonella* diseases are rarely transmitted by water and since most surface water supplies are chlorinated or disinfected by other means, the risk of acquiring typhoid fever caused by *Salmonella typhi* is virtually non-existent.

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“....salmonids are potentially ecological receptors adversely affected by a successful invasion of whirling disease, *Myxosoma cerebralis*...”

Salmonids vary greatly in their susceptibility to Whirling Disease. The report does not need to state which salmonids are most affected and what is the distribution of the most affected species in the area of concern.

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“.....re-colonization during recovery following removal of a biological invader....”

We could not find a reference to a biological invader being successfully removed and eradicated following its establishment. Eradication must occur before establishment and eradication success cannot be confirmed for a number of years, probably more than 10 years, until numbers could reach levels when the species would be noticed.

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Biota 2.1.4.4 -Characterization of Risk

A fundamental problem in reducing biota transfer risk to a numeric equation is that values can not be developed to predict:

- what organisms may be on a pathway;
- how an organism will behave in a new environment;
- what impacts the invader might have on native species and
- meaningful probabilities.

The better method would probably to identify the pathway(s) and determine the steps needed to ensure that this pathway will not become the vector by which an interbasin transfer of non-native biota can occur?”.